

Application. No.: 10/628,709
Amendment Dated: July 20, 2005
Reply to Office Action of: May 6, 2005

MAT-8450US

Remarks/Arguments:

The pending claims are 1-28. Claim 22 has been amended to correct a typographical error. The amendment is supported by page 4, lines 12-13 of the specification.

Claims 1-28 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Applicants' Admitted Prior Art in view of Sugawara et al. (U.S. Patent No. 5,849,424). The rejection is respectfully traversed.

Claim 1 recites a thermal fuse comprising, in part:

surface layers made of metal including tin as a main substance provided on said lead conductors.

Claim 2, dependent from claim 1, recites that the "surface layers are substantially entirely made of tin."

Paragraph 3, pages 2-3 and paragraph 4, page 5 of the Office Action contend that the following parts of Sugawara disclose surface layers made of tin as a main substance and substantially entirely made of tin: column 5, lines 65-67 and column 6, lines 7 and 8. Applicants respectfully disagree.

Column 5, lines 65-67 of Sugawara makes no reference at all to the quantity of tin that comprises the tin coating. Instead, it discusses only the thickness of the tin coating:

The thickness of Sn coating is preferably specified to range from 0.5 to 20 μm , more preferably from 1 to 10 μm , and the most preferably from 1 to 5 μm .

Column 6, lines 7-8 also does not support the rejection. It states:

As regards Sn to be used for coating, it may be a Sn-Pb alloy whose Sn content is 50% or more.

This single sentence, taken out of context, does not disclose that tin is the main substance in the surface layer. Instead, this quotation only discusses the composition of the tin component of the final Cu-Sn layer.

Throughout the Sugawara patent, the disclosure repeatedly states that the surface layer comprises a Cu and Sn combination. For example, the patent contains the following statements:

The invention provides a copper-base alloy having on the surface thereof a high-hardness coating consisting essentially of Cu and Sn. (col. 2, lines 14-17)

The invention also provides a copper-base alloy having a composition consisting essentially of 0.1-15 wt % Ni, 0.1-10 wt % Sn, and 0.005-0.5 wt % P, with the balance being Cu and incidental impurities and having on the surface thereof a high hardness coating layer consisting essentially of Cu and Sn. (Col. 2, lines 17-22).

See also, col. 2, lines 37-38 ("to form on the surface of the material a high hardness coating consisting essentially of Cu and Sn"); col. 6, lines 33-35 ("a coated alloy having a high hardness surface coating containing Cu-Sn intermetallic compounds"). Furthermore, "[t]aking into consideration the thinness of the surface coating, the coated Cu alloy also may be characterized as a Cu-rich alloy with a high hardness Cu and Sn containing surface coating with an intermediate diffusion layer." (col. 6, lines 44-48). There is no disclosure that the surface Cu-Sn layer includes tin as a main substance or that the surface layer is substantially entirely made of tin.

The above sections of the Sugawara patent, and other sections, demonstrate that the surface layer is a Cu-Sn layer. There is no disclosure or suggestion that the surface layer is made of tin as a main substance or that the surface layer is substantially entirely made of tin. The tin component of the Cu-Sn layer may, itself, be made of a tin-lead alloy whose tin content is 50% or more. But, the composition of the tin in the tin component does not disclose or suggest the amount of tin in the overall Cu-Sn layer.

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Accordingly, claims 1 and 2 are not subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Applicants' Admitted Prior Art in view of Sugawara. Similarly, since claims 3-9, and 19-23 also depend from claim 1, those claims are not subject to the same rejection for at least the same reasons.

In addition, claims 19-23 recite specific, high percentages of tin, as shown in the following table:

Claim No.	Wt. % Tin
19	95-99
20	97-99.5
21	96-99.7
22	95-97
23	95-97

Sugawara does not disclose or suggest using such high percent ranges of tin in the surface layer. The lower end of each of the ranges varies from 95 wt. % to 97 wt. %. The higher end of each of the ranges varies from 97 wt. % to 99.7 wt. %. Nothing in Sugawara discloses or suggests any such high wt. %. Even if it were assumed (which applicants certainly do not concede) that col. 6, lines 7-8 means that the tin content of the overall surface layer content is 50% or more, such a generalized statement does not disclose or suggest that the percentage of tin should be in the high ranges recited in claims 19-23. More specifically, col. 6, lines 7-8 does not disclose or suggest a tin content of at least 95 wt. % or any of the other higher percentages recited in these claims. Accordingly, for these additional reasons, claims 19-23 are not subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Applicants' Admitted Prior Art in view of Sugawara.

Claims 10-18 and 24-28 are method claims that recite the same patentable features that are recited in the apparatus claims. Accordingly, these claims are also not subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Applicants' Admitted Prior Art in view of Sugawara for at least the same reasons that the apparatus claims are not subject to rejection.

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For all of the above reasons, applicants solicit allowance of the entire application.

Respectfully submitted,


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